



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/558,169	11/22/2005	Guenther Baschek	2003P033453WOUS	1917
22116 7590 07/07/2009 SIEMENS CORPORATION INTELLECTUAL PROPERTY DEPARTMENT 170 WOOD AVENUE SOUTH ISELIN, NJ 08830				
EXAMINER ENIN-OKUT, EDUE				
ART UNIT		PAPER NUMBER		
1795				
MAIL DATE		DELIVERY MODE		
07/07/2009		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/558,169

Applicant(s)

BASCHECK ET AL.

Examiner

Edu E. Enin-Okut

Art Unit

1795

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 April 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 12-30 is/are pending in the application.
- 4a) Of the above claim(s) 14, 15, 17 and 18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 12, 13, 16, 19-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SI/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

FUEL CELL AND HEATING DEVICE OF A FUEL CELL***Detailed Action***

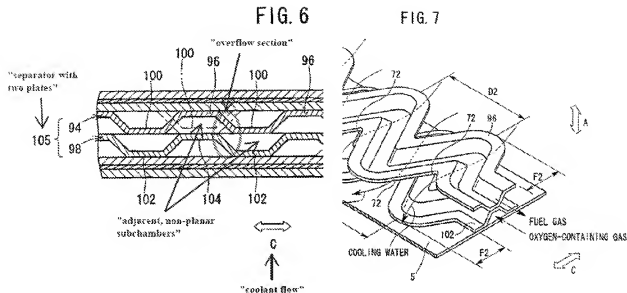
1. The amendments filed on October 24, 2008 were received. Applicant has amended claims 12, 13, 22, 23 and 28-30; and, cancelled claims 14, 15, 17 and 18. Claims 12, 13, 16 and 19-30 are now pending.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 102

7. Claims 12, 13, 16, 22, 23 and 28 are rejected under 35 U.S.C. 102(e) as being anticipated by Suzuki et al. (US 7,195,837).

Regarding claims 12, 13, 16, 22, 23 and 28, Suzuki teaches a first separator 94 of a fuel cell unit, composed of an electrolyte electrode assembly 7, and a second separator 98 of another unit cell disposed adjacent to each other in a stacked assembly 90 (Abstract; 1:19-25, 10:53-65; Claim 1; Figs. 5, 6, 7). The separators 94,98, jointly making up a separator unit 105, have first and second hollow ridges 100,104 with straight and bent sections (Abstract; 10:67-11:8; Figs. 6, 7). The second hollow ridges 104 are out of phase with the first hollow ridges 100, i.e., are staggered with respect to ridges 100 (11:12-14). Crest surfaces of straight sections of the separators 94,98 are in contact with each other in regions where they cross, while crest surfaces of the bent sections are spaced apart from one another (11:14-19). The spaced crest surfaces allow separators' troughs 96,102 to communicate with each other, providing communication passages 72 between the first and second separators 94,98 (Abstract; 11:19-24). Cooling water is passed through the communication passages 72 (Abstract; 11:19-24). Fuel gas and oxygen-containing gas flow through the hollow ridges of the separators (3:28-35, 5:61-64; Figs. 6, 7). (See labeled figures from Suzuki below.)

Art Unit: 1795

Suzuki, Figs. 6 and 7:***Claim Rejections - 35 USC § 103***

8. The rejections of claims 12, 13, 16 and 19-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mattejat et al. (US 5,472,801) in view of Nolscher (US 6,080,502), Enami (JP 10-308227), and Yasuo et al. (US 2002/0187379) are withdrawn because claims 12, 13, 22, 23 and 28-30 were amended.

9. Claims 24-27, 29 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. as applied to claims 12, 13, 16, 22, 23 and 28 above.

Suzuki is applied and incorporated herein for the reasons above.

Regarding claims 24-27, Suzuki does not expressly teach that the total surface area of the contact surfaces is at least 10%, but no more than 90%, of the surface area of the separator.

However, one of ordinary skill in the art would appreciate that the separators of Suzuki contacts its unit cell over an amount, or percentage, of its surface area (see Suzuki, Fig. 6). That artisan would also appreciate that the degree of contact of surface area of the separator plates affects the capacity to cool

Art Unit: 1795

the fuel cell allowing more or less surface area of coolant to flow through. Further, Suzuki does teach that the rate at which the cooling water flows can be adjusted by selecting the shapes of the first and second hollow ridges (12:1-3).

Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to form the fuel cell of Suzuki in a manner where the total surface area of the contact surfaces is at least 10%, but no more than 90%, of the surface area of its separator to optimize the amount of contact surface which, in turn, affects the volume of coolant contacting the separator plates, depending on the amount of cooling needed by the cell.

Regarding claims 29 and 30, the structural limitations recited in this claim have been addressed above with respect to claim 12. However, Suzuki does not expressly teach that its separator unit serves as a heating device.

One of ordinary skill in the art would appreciate that the separator unit 105 of Suzuki cools unit cells of its stacked assembly 90 using the transport of heat from the higher temperature cell to the lower temperature cooling water flowing through the communicating passage 72 between separators 94,98. That artisan would also appreciate that this process can be reversed by passing a medium through that passage having a temperature higher than that of the unit cell.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the separator unit of Suzuki as a heating device for a fuel cell because it is well-known in the art to provide heat to fuel cell components to facilitate cell operations under conditions below its normal, ambient operating temperature, or to heat the cell during its start-up.

10. Claims 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. as applied to claims 12, 13, 16 and 22-30 above, and further in view of Enami (JP 10-308227).

Suzuki is applied and incorporated herein for the reasons above.

Art Unit: 1795

Regarding claim 19, Suzuki does not expressly teach that the embossings of the plates are rotated relative to one another.

Enami teaches the creation of coolant flow passages between using adjacent separators 1,2 with projecting parts which are ribbed-shaped, and the separators are disposed upon each other in manner where their primary axes offset, as shown in Figs. 1, 4 (Abstract; Figs. 1, 4).

It would have been obvious to one of ordinary skill in the art at the time of invention to rotate embossings of the plates of Suzuki relative to one another because Enami teaches that this can facilitate the formation of coolant passages between separator plates; and, it has been held that rearranging parts of an invention involves only routine skill in the art. *In re Japikse*, 181 F.2d 1019, 86 USPQ 70 (CCPA 1950)). See MPEP 2144.04 (VI).

11. Claims 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. as applied to claims 12, 13, 16, 19 and 22-30 above, and further in view of Yasuo et al. (US 2002/0187379).

Suzuki is applied and incorporated herein for the reasons above.

Regarding claims 20 and 21, Suzuki does not expressly teach that the contact surfaces are gold-plated.

Yasuo teaches separator for a fuel cell a where the surface of the separator is plated with a precious metal, such as gold, platinum, or nickel, that has high corrosion resistance and high conductivity (Abstract; para. 9).

It would have been obvious to one of ordinary skill in the art at the time of the invention to plate the contact surfaces of Suzuki with gold because Yasuo teaches that the plating can impart those areas with corrosion resistance and high conductivity.

Response to Arguments

12. Applicant's arguments with respect to claims 12, 13, 16 and 19-30 have been considered but applicant has amended the claims such that new grounds of rejection were necessitated.

Conclusion

13. The following prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Mizuno (US 7,468,217) teaches a fuel cell according to an embodiment of the invention includes including a separator on which a gas passage groove is formed; and, a cross sectional area of a gas passage changes in a direction in which the gas passage groove extends, while each of an opening width of the gas passage groove and a depth of the gas passage groove remains substantially constant (Abstract).

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Edu E. Enin-Okut** whose telephone number is **571-270-3075**. The examiner can normally be reached on Monday - Thursday, 7 a.m. to 3 p.m. (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dah-Wei Yuan, can be reached on 571-272-1295. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer

Art Unit: 1795

Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Edu E. Enin-Okut/

Examiner, Art Unit 1795

/PATRICK RYAN/

Supervisory Patent Examiner, Art Unit 1795